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14. ABSTRACT The goal of the "Mississippi prostate cancer HBCU Undergraduate Research Training Program" is to promote interest in careers in PCa research and care among undergraduate students from Tougaloo College (TC) and Jackson State University (JSU) at the University of Mississippi Medical Center (UMMC)-Cancer Institute (CI). During the summer of 2016, 2 undergraduate scholars from TC and JSU, gained experience in performing PCa research at UMMC-CI. This number added to trainees from Classes of 2014 and 2015 makes a total of 14 trainees for this training grant. Two (2) trainees are pursuing graduate studies in cancer biology; 2 trainees joined other higher education in Health Sciences related programs; 2 trainees are hired employees; 8 trainees are currently pursuing graduation; 14 meeting presentations in the poster or oral format included work related to internships; trainees received numerous (7) awards; manuscripts (4) in preparation include trainees as coauthors; and 1 PCa Research Mini Symposia have been organized. Research projects are leading to development of novel effective treatments and addressing mechanisms of resistance for men with high-risk or metastatic PCa. Likewise, these projects will eventually help distinguishing aggressive from indolent disease in men newly diagnosed with PCa. Scholars of this Program are becoming well-rounded, trained professionals with interest in PCa research and healthcare.					
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Annual Summary

1. Introduction

Mississippi has the second highest rate of PCa death in the country and the fourth highest incidence rate. Factors such as increased risk for African-Americans, obesity and medical distrust contribute to high rates of PCa in Mississippi. The scarcity of minority physicians and scientists is a major factor in perpetuating distrust in medicine and science among minority communities. Because of these reasons the scope of our program is to increase the number of HBCU scientists and physicians who are trained as PCa researchers. The subject is to train undergraduate students from two Historically Black Colleges and Universities, Tougaloo College (TC) and Jackson State University (JSU), so they can gain experience in performing prostate cancer (PCa) research at the University of Mississippi Medical Center (UMMC) Cancer Institute (CI). Participants will participate in a 10-week comprehensive training program in PCa research and care. Interns will perform hands on PCa research, attend regular hosting lab meetings, weekly one-on-one meetings with their mentors, attend UMMC-CI's weekly seminar series, participate in a lecture program including PCa-related lectures, shadow a physician to expose them to experiences related to PCa clinical practice, participate in a PCa Research Symposium, attend seminar series about the research programs at UMMC, postgraduate studies alternatives, graduate school application process, and will be provided opportunities in social settings to improve their networking and communication skills. Interns will also prepare a final written report. Diverse ways of tracking interns will be utilized in order to contact them, update their biographical and training information, as well as their accomplishments, awards, interest and achievements related to their approach to academic career (i.e., enter graduate school, medical school or other related health-related professions contributing to PCa research and care). Our ultimate purpose is to create a long-term partnership between TC, JSU and UMMC-CI that will produce a cadre of top-caliber minority scientists and physicians with a specific interest in PCa research, prevention, diagnosis and care.

2. Keywords

UMMC-HBCU, Prostate Cancer, Training Grant, University of Mississippi Medical Center, Cancer Institute, Tougaloo College, Jackson State University, CDMRP, PCRP, research, care, aggressive, indolent, disease, newly diagnosed.

3. Accomplishments

Major goals of the project [as stated in the approved Statement of Work (SOW)]:

Specific Aim 1: To, during a 2-year period, recruit 6 undergraduate trainees per year from TC and JSU.

Specific Aim 2: To provide the mentees a comprehensive training curriculum in PCa research at UMMC-CI.

Specific Aim 3: To track and coach trainees on their progress towards become biomedical Prostate Cancer researchers

What was accomplished under these goals:

Upon completion of the second year of the project (8/2015 – 8/2016), we have trained 14 undergraduate students from TC and JSU. There were no technical or unexpected difficulties encountered and/or any deviations from the original SOW. Per Instruction, our training and research accomplishments following each task outlined in the approved SOW are listed as follows:

Specific Aim 1: To, during a 2-year period, recruit 6 undergraduate trainees per year from TC and JSU. Year 1, months 1-3; Year 2, months 13-15 (completed)

Selection process: The applicant pool included all sophomores and juniors enrolled in a Major in the life sciences (biology, biochemistry, chemistry, biotechnology, etc.) at TC or JSU. We also included in the selection pool seniors based on their commitment to go to Graduate School (applying or accepted in a graduate program at the time of application to our program). Our strategy of advertisement included online advertisement in the research-related section and Summer Internships and Outreach Programs in the HBCUs, UMMC-CI, UMMC-discovery U Program, and UMMC-School of Graduate Studies in the Health Sciences webpages. We also developed a webpage (<http://www.umc.edu/researchtraining/>). This resource has continued been particularly successful since includes information about eligibility requirements, program components, summer research internship, housing assistance, application packet, and contact information, list of mentors, and news (**Appendix #1**). In addition, Flyers were placed in the two colleges and at the host institution (**Appendix #2**). The selection process was initiated 60 days prior to the beginning of the summer training course.

The following tables refer to some demographics aspects related to the applicant pool for the class of 2016 which included 2 students selected (1 from JSU and 1 from TC). This surpasses our goal of training 12 students. Total of trainees are now 14. Follows demographics for Class of 2016:

Applicant numbers	2016
JSU	7
TC	4
Gender (overall)	
Female	9
Male	2

Gender (TC)	2016
Female	2
Male	2
Gender (JSU)	
Female	7
Male	0

It is also worth noting that independent of the school, and as noted in our previous report, females lead the number of applicants to our program. Overall, females represented 81.8% of the pool of applicants to class of 2016. Males represented 18.2% of the pool of applicants to class of 2016. The distribution was similar at the level of individual schools (note tables above). As we progress on the development of our program, we continue our efforts to promote inclusion of males in our program.

A question related to the academic status of applicants applying to our program is of great importance to assess the nature of the pool and its distinct component when analyzing per school.

The following tables represent the average GPA for the whole pool as well as per each individual school:

GPA (average)	2016
TC	3.45
JSU	3.64

GPA (TC)	2016
Average	3.45
Standard deviation	0.41
Median	3.42

GPA (JSU)	2016
Average	3.62
Standard deviation	0.26
Median	3.64

From the GPA results, a good representation of academic performance, we can propose that the application pool remains homogeneous (compared to our previous report) between schools. This statement however, needs further validation since the standards between schools for evaluation have not been normalized at the present.

Following the selection process, 2 trainees were selected for the Class of 2016. Individual digitalized application packages and a well-defined set of scoring criteria was distributed to a set of five raters. Those included PI, member of Program Advisory Board, a research mentor, HBCU faculty advisors, and Program Coordinator. Applicants were ranked by highest to lowest based on the GPA, Personal statement and Letters of reference.

Follows the list of applicants selected for the Class of 2016:

Name	School	Classification	Major	GPA
Courtney Mangum	TC	Junior	Biology	3.77
Ornella Amoah	JSU	Sophomore	Chemistry	3.79

Match the student fellows with their research mentors at UMMC-CI. Year 1, months 4-5; Year 2, months 16-17 (completed for Years 1 and 2)

As planned, trainees were matched to mentors based on the mentee's research interests and following an interview between the mentee and potential mentor. Mentor assignments were completed 30 days prior to the initiation of the summer program. Use of the web-based resource (<http://www.umm.edu/researchtraining/>) allowed mentees to identify mentors based on research interests. Typically, the trainees selected three mentors and ranked them by order of preference. Interviews followed (including the presence of the Program Director) and a decision about the selected mentor was taken consulting the option of the mentee and prospective mentors.

Specific Aim 2: To provide the mentees a comprehensive training curriculum in Prostate Cancer research at UMMC-CI (completed)

Summer course:

The trainees participated in a 10-week comprehensive training program in PCa research and care. As outlined (**Appendix #3**), the Course Program was completed as anticipated.

The following description refers to landmarks achieved during the Summer Training Course:

PCa-specific lecture program: Included lectures were focused on Basic Cancer Biology; Cancer Pathology Pharmacology; Clinical science; Population Science; and Careers in PCa Research and Care.

Summer research project: The mentees were associated to a primary mentor. They developed their research project under direct supervision of a graduate student or postdoc.

The following table resumes mentors and mentees for the Classes of 2016:

Mentee	School	Mentor	Project Tittle
<i>Class of 2016</i>			
Courtney Mangum	TC	Keli Xu	Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models
Ornella Amoah	JSU	Christian Gomez	Effects of Hypoxia on the Aggressiveness of PCa

Students attended regular hosting lab meetings, and met weekly with their mentors. These one-on-one meetings were highly valuable to discuss the progress of the research projects. For the

inaugural course, once a week, the students visited another lab involved in PCa research; in these occasions they interacted with other PIs and lab personnel. It was intended that this activity would give the students a broader vision of the PCa research done at the Cancer Institute.

The following picture shows aspects of the wet lab centric summer research program:



The Summer Training Program is centered on a mentored hands-on a research intensive project (Courtney Mangum with her mentor Dr. Keli Xu, Ph.D. on the left and Ornella Amoah with the graduate student Nasir Butt, M.D.)

Shadowing: To expose mentees to experiences related to PCa clinical practice, they shadowed clinicians. See **Appendix #3** for list of clinical mentors involved in the shadowing activities. This activity, occurred once a week (between weeks 4-6) and included touring to Urology, Hematology-Oncology, and Radiation Oncology facilities. Shadowing exposed the mentees to the challenges related to research and care of PCa patients.



*Scenarios for multi-disciplinary patient assessment were presented to students
(Mentees attend a tumor teleconference focused on Vice-President Biden
“Cancer Moonshot Initiative”)*

End of the Summer 2016 PCa Research Symposium: This activity has become a keystone of our program. The program has attracted the attention of the UMMC community at large, along with that from local academic institutions. Forty four (44) attendants registered for the conference (**Appendix #4:** Sign-up sheet for 2016 PCa Research mini-Symposium). Speakers (**Appendix #5:** Program for the 2016 Research Conference) (10), included: Srinivasan Vijayakumar, Director of UMMC-Cancer Institute, Professor and Chairman, Department of Radiation Oncology University of Mississippi Medical Center, "Precision Medicine and Its Role in Overcoming Disparities in Health Care in Mississippi"; Keli Xu, Ph.D., Assistant Professor of Neurobiology and Anatomical Sciences, member of the Cancer Institute at University of Mississippi Medical Center, "Potential Roles of Lunatic Fringe and Notch in Aggressive Prostate Cancer"; Timothy Turner, Ph.D., Professor and Chairman Department of Biology, Jackson State University, "Targeted Treatment of Prostate Cancer"; Nasir Butt, Ph.D. Candidate, Department of Pathology, UMMC, "Novel Therapeutic Strategy using Dietary Bioactive Compound for Prostate Cancer"; Marcelo Sakiyama, Ph.D. Candidate, Department of Pathology, University of Mississippi Medical Center, "MHC Class I Polypeptide-Related Sequence A (MICA) as a Factor of Aggressive Prostate Cancer". Diva Whalen, B.S., Graduate Student, Meharry Medical College, UMMC – HBCU: Prostate Cancer Research Training Program Class of 2014, "The Next Step: Success After the Program"; Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College, "Undergraduate Training for Biomedical Research at Tougaloo College"; and the two trainees of the UMMC-HBCU 2016 PCa Training Program: Ornella Amoah, JSU, "Effects of Hypoxia on the Aggressiveness of Prostate Cancer"; Courtney Mangum, TC, "Identifying Progression of Aggressive Prostate Cancer Originating from

Lunatic Fringe/Notch-Regulated Mice Models”. The Research Mini Symposium represents a venue for the trainees to present their research project, increase their knowledge about the different research aspects of PCa, and engage themselves in productive networking activities with seasoned PCa researchers, academic leader and PCa community advocates, among others as is exhibited in **Appendix #6**.

Summer Undergraduate Research Experience (SURE): To maximize the mentees’ summer experience, our Program has been integrated with the SURE program. This initiative oversees and promotes undergraduate outreach summer activities in biomedical research through the UMMC School of Graduate Studies in the Health Sciences. Mentees from our program interacted with top students from around the state and the country, attended to weekly seminar series (**Appendix #7: SURE program for 2016**). Students learned about the research programs at UMMC, postgraduate studies alternatives, and graduate school application process. They also were provided numerous opportunities in social settings to improve their networking and communication skills (**Appendix #7: SURE social activities program**). They presented their research projects in the oral and poster format (**Appendix #8: Summer Undergraduate Research Symposium, 2016**. Highlighted in the program are our students’ names).

The following picture depict mentees engaged in activities of the SURE:



The Summer Undergraduate Research Experience allowed our trainees to interact with top students from around the state and the country and learn about graduate school opportunities.

(Courtney Mangum -on the left- and Ornella Amoah -on the right- at the Summer Undergraduate Research Symposium)

What opportunities for training and professional development did the project provide?

Preparation of reportable products (i.e., scientific abstracts and manuscripts) based on the trainees' research:

Trainees have worked and continue working in close contact with their mentors in summarizing their findings.

Final report: At the end of the Summer Training Course mentees prepared a final report (**Appendix #9**). The 1-page document was structured as a scientific conference abstract. Early on, mentors and mentees were instructed to refer to a very specific format for elaboration of the document. Format requirements included extension (1-page), document type (Word file), Font (Times New Roman), Font size (12 points), Space (single), Margins (1.25"). Structure was also specified (Title, Authors, Affiliations, Body: Including introduction, main objective or hypothesis, materials and methods, main results, discussion and future directions), and Funding sources: (i.e., grant/s from PI, DoD: W81XWH-14-1-0151).

Student presentations: Class 2016 interns presented their research in the poster and/or oral format. So far 7 (seven) meeting presentations in the poster or oral format included work related to our 2 trainees. Trainees presented their work in local meetings, at 2016 UMMC PCa Research Mini Symposiums (**Appendixes #5 and #6**), 2016 Summer Undergraduate Research Symposiums (**Appendix #7**), and TC Research Day (**Appendix #10**).

Manuscripts in preparation (4): Anthony Keyes, the process of writing a publication from the work he did during the summer of 2016 (Class of 2014). Joshua Agee (Class of 2014) and Timera Brown (Class of 2015) will be coauthors in a manuscript from Drs. Mao and Zhou (mentors). Angel Garcia (Class of 2015) will be coauthor in an article from Dr. Gomez (PI) lab. Adesuwa Ekunwe (Class of 2015) is actively working with Dr. Anait Levenson in the preparation of a manuscript including her as coauthor. In recognition of the relevance of publications for the success of this program, the leadership continue actively engaging mentors and mentees in the preparation of manuscripts. For this purpose, active mentee-mentor communication modalities have implemented. To stimulate students' continued work, they will offered part time opportunities in the host laboratories at UMMC. To formalize this process, they will be offered an academic credit-conducting Independent Study Course co-mentored by the research mentor at UMMC-CI and the faculty advisor at the HBCU. This extended mentoring mechanism has been implemented and is offered to the students.

Specific Aim 3: To track and coach trainees on their progress towards become biomedical Prostate Cancer researchers

There are different modalities to track trainees and support them. Some of them are based at the HBCUs and others are based at UMMC. The mentors and mentees maintain periodical communication. Additional constant communication occurs between Undergraduate Faculty Advisors at HBCU and mentees for evaluating academic performance and willingness to pursue

graduate studies. As indicated above, the Program Director has worked closely with mentors and HBCU advisors to work on modalities to sustain communication with the mentees and achievement of program success indicators. Faculty advisors at the HBCUs have worked with the trainees in promoting their academic progress preparing them for graduate school.

To exemplify our progress on supporting our fourteen (14) trainees in their path to pursuing PCa careers we exhibit some relevant landmarks:

Our Trainees have received numerous (7) awards. Class of 2014- Anthony Keyes: Poster presentation award at ABRCMS 2015 in Seattle, WA; Research Experience for Undergraduates Summer Program at University of Illinois at Urbana-Champaign (Summer 2015); 2016 iREU (international Research Experiences for Undergraduates) at University of Bordeaux, France. Class of 2015- Angel Garcia: NSD Research Symposium 2015 poster presentation award and second place poster award at Mississippi College Undergraduate Research Symposium, Tougaloo College; iSEED Summer Research Experience at the University at Buffalo. Jamal Keyes: 2016 Summer Research experience for undergraduates, RISE (Research in Science and Engineering) at Rutgers. Timera Brown: 2016 Research experience for undergraduates at Vanderbilt Institute for Nanoscale Science and Engineering. **(Appendix #11: Trainees Awards)**

Two (2) trainees are pursuing graduate studies in cancer biology: Diva Whalen (Class of 2014) finished her first year at Meharry Medical College to attain a Ph.D. Charles Phillips (Class of 2015) was accepted at the School of Graduate Studies in the Health Sciences, Graduate Program in Pathology, UMMC to attain a Ph.D. **(Appendix #12)**

Two (2) trainees joined other higher education in Health Sciences related programs: Ansley Scoot (Class of 2014) was accepted at the University of Arkansas for Medical Sciences College of Medicine **(Appendix #13)**. Tatyana Givens (Class of 2014) was accepted into Mercer's Doctor of Pharmacy Class of 2020 at Mercer University **(Appendix #14)**.

Attendance and presentation at Scientific Meetings (14): Class of 2014- Anthony Keyes poster presentation at ABRCMS 2015 in Seattle, WA. Diva Whalen, invited speaker at 2016 Prostate Cancer Research Mini Symposium, UMMC. Class of 2015- Angel Garcia: Poster presentation at 2015 14th Research Symposium of Students' Summer Research Series and 2016 Mississippi College Undergraduate Research Symposium at Tougaloo College; 2016 Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM). Washington, D.C. Adesuwa Ekunwe: Poster presentation at ABRCMS 2015, Seattle, WA. Charles Phillips: poster presentation at 2015 TC 14th Research Symposium of Students' Summer Research Series. Timera Brown: oral presentation at 2015 TC 14th Research Symposium of Students' Summer Research Series. Class of 2016- Courtney Mangum: oral presentation at 2016 Prostate Cancer Research Mini Symposium at UMMC; poster and oral presentation at 2016 Summer Undergraduate Research Symposium at UMMC. Ornella Amoah: oral presentation at 2016 Prostate Cancer Research Mini Symposium at UMMC; poster and oral presentation at 2016 Summer Undergraduate Research Symposium at UMMC. **(Appendixes #5, #10, #11 and #15)**

Diverse modalities for trainees tracking have been implemented. They have been used to prepare this Annual report:

Trainees' database: We implemented a database to register trainee's contact, biographical and training information, accomplishments such as fellowships, awards, employment, education, publications, funding received, and poster and oral presentations at scientific conferences, etc. Recently, an electronic Redcap-based survey helps us to compile information for population and update of our database. This work is diligently performed by Mr. Marcelo Sakiyama, program assistant. Our most recent summary update based on the information archived in the database refers to the academic progress of trainees:


14 undergraduate scholars from TC and JSU, gained experience in performing PCa research at UMMC-CI. ***Two (2) trainees are pursuing graduate studies in cancer biology.*** Diva Whalen (Class of 2014) is entering her second year at Meharry Medical College to attain a Ph.D. degree. Charles Phillips (Class of 2015) joined the School of Graduate Studies in Health Sciences, Department of Pathology, at UMMC. ***Two (2) trainees joined other higher education in Health Sciences related programs:*** Ansley Scoot (Class of 2014) was accepted at the University of Arkansas for Medical Sciences, College of Medicine and Tatyana Givens (Class of 2014) was accepted into Mercer's Doctor of Pharmacy at Mercer University. ***Two (2) trainees are hired employees:*** Joshua Agee is a researcher coordinator at Open Arms Healthcare Center, UMMC. Brittany Martin is working as an optician at Wallace Optometry Associates and plans to attend The University of Alabama Birmingham School of Optometry in the Fall of 2017.

Eight (8) trainees are currently pursuing graduation: Class of 2014: Anthony Keyes, senior in Chemistry and Mathematics at JSU. Class of 2015: Adesuwa Ekunwe, is a Rising Junior in Chemistry at JSU. Angel Garcia, is a Rising Senior in Biology at TC. Deion Phillips, is a Rising Senior in Biology at JSU. Jamal Keyes, is a Rising Junior in Chemistry at JSU. Timera Brown, is a Rising Junior in Biology at TC. Class of 2016: Courtney Mangum, is a senior biology major at TC, Vice-President of the National Pre-Alumni Council of the United Negro Fund. Ornella Amoah is a junior Chemistry major at The JSU, NOBCCHE JSU student chapter secretary and the ACS JSU chapter vice president. The Program Director, in conjunction with the faculty advisors, and assisted by Mr. Sakiyama maintains and updates the database of all information collected.

How were the results disseminated to communities of interest?

As dissemination modalities we used Facebook and LinkedIn. Those resources have been used by our trainees as means to obtain continuous tracking, promote engagement, interaction and professional networking, help professional work's dissemination, and develop professional presence. Social media additionally, has been used as a tool to educate the public about trainees' experience in the Program and as a way to increase public awareness of PCa research performed by minorities.

The following pictures exemplify use of social media as means of mentee tracking and program dissemination:



Jamal Keyes
Research Intern at University of Mississippi Medical Center
Colorado Springs, Colorado Area | Biotechnology

Previous Rutgers University, Jackson State University, United States Air Force
Education Jackson State University

[Send Jamal InMail](#) 24 connections

<https://www.linkedin.com/in/jamal-keyes-894b21ba>

Background

Summary
A current student who is interested in pursuing an MD-PhD degree program following graduation with a primary interest in the study of drug delivery systems.

Experience

Research Intern
University of Mississippi Medical Center
June 2015 – Present (1 year 4 months) | United States
Development and synthesis of a cell-penetrating peptide (CPP) and therapeutic peptide (TP) conjugated elastin-like polypeptide (ELP) drug delivery system for cancer models.

Summer Research Intern
Rutgers University
May 2016 – August 2016 (4 months) | United States
The development and characterization of polyelectrolyte polymer-peptide nanoplexes for antimicrobial applications.

*Trainees are instructed to develop their professional social profile
(Jamal Keyes - Class of 2015- most current LinkedIn update. 09/28/2016)*



The Cancer Institute at UMMC

1 share

The Cancer Institute at UMMC updated their cover photo August 4 · 🌐

Like Comment Share

You, Ekim Elensel and 7 others

The Cancer Institute at UMMC shared National Cancer Institute's photo August 3 · 🌐

4 Likes

Bebe Reeves Richardson June 21 at 9:46pm · 🌐
Thank you for caring for my husband, William

REVIEWS

5.0 of 5 stars 1 review

Pier Paolo Claudio 5★ about an hour ago · 🌐
Like Comment

PEOPLE ALSO LIKE

Blair E. Batson Hospital... HospitalCare · Like

*Social media allows outreach and Program dissemination
(Speakers, 2016 PCa Research Symposium in the UMMC-Cancer Institute Facebook group page)*

Plans to accomplish the proposed goals: With focus on the next report, Program leadership is focused on the following aspects:

- Continuous mentee-mentor interaction. For this purpose trainees are currently being offered the academic credit-conducting Independent Study Course co-mentored by the research mentor at UMMC-CI and the faculty advisor at the HBCU.
- Meeting presentations. Our goal will be to support trainees on the submission of abstracts to local and national meetings.
- Manuscripts. As indicated, at least publications may have mentees as coauthors. The leadership team will make special emphasis on the achievement of this goal.
- Application to graduate school programs. So far, student from the inaugural Class, and one from the Class of 2015 were accepted to graduate school programs with emphasis in cancer biology and pathology. Other 2 (Class of 2014) are in higher education in health sciences related programs. Many of the trainees remaining as undergraduates will be in position to apply to graduate programs during this academic year. We are closely working with them on their application process.

4. IMPACT

Development of the principal discipline(s) of the project: Since UMMC-CI faculty members are engaged in a variety of research projects, trainees have had the opportunity to be trained in different areas of PCa research. Particularly the trainees have been involved in mechanisms of tumorigenesis. The results generated will allow advancement on new therapeutic strategies for men with aggressive disease. Since our researchers also have interest in Biomarker development and validation, projects will help to distinguish aggressive from indolent disease in men newly diagnosed with PCa.

One of the most relevant aspects is the training of our students in relation to achieve superior level so of PCa knowledge. In 2016, a questionnaire was applied to specifically assessment of proposed goals. An unannounced pre (before first lecture) - vs. post (after the last lecture)-evaluation test evaluated the impact of the lectures program on the trainees' knowledge about PCa. Overall, see **Appendix #16** for test results, the students exhibited a doubling of their knowledge score (average pre-training score was 30.5% correct; average post-training score was 67.5% correct). Despite the small number of questions and students, one can draw a few clear observations. Before the class, none of the students had any knowledge of FDA-approved PCa biomarkers. By the time the training ended, every student knew the correct answer. Tests such as this objectively demonstrate the achievements of our training program.

Other disciplines: Another area of interest the work the trainees is relevant for development of effective treatments and address of mechanisms of resistance for men with high-risk or metastatic PCa.

Technology transfer: It has been a tremendous impact of this project in allowing resource sharing between the UMMC campus and the HBCUs. UMMC, being the only academic research center in the state of Mississippi, has a unique capital of technology resources. The HBCUs have taken advantage of those resources as means to increase the value of their research programs in cancer biology, particularly PCa. As examples, many of the projects trainees have been involved utilized

patient-derived materials and associated data, novel therapeutic models, agents or devices designed by UMMC researchers. As some students develop research at their HBCUs through the academic year, they have taken knowledge and some of those resources to their schools.

Society beyond science and technology: The first ones impacted by our project have been our own trainees. They have become aware of the particularities of PCa for their own communities. As result of that (**Appendix #17** Class of 2016 Students testimonials), they have grown fonder of biomedical cancer research and have embraced the scientific career as a professional option. The Mississippi PCa HBCU Undergraduate Research Training Program is the first and only one in the state designed to provide undergraduate minority student training in PCa research at a research intensive environment. This Training Program has empowered HBCU undergraduates to pursue PCa careers, it has generated a pipeline for undergraduate research in PCa in Mississippi. Trainees of our program are becoming well-rounded professionals with training to thrive in PCa biomedical research, prevention, diagnosis and care. In the near future former mentees, as junior faculty will enlarge the ranks of minority researchers at TC, JSU or UMMC. They will impact their communities and will contribute to reduce PCa health disparities.

The UMMC community is very diverse and has interest in numerous disciplines of academic biomedical knowledge. Our program has generated a vibrant environment for interest in PCa research. This has been reflected in the overwhelmingly positive interest to our Prostate Cancer Research Mini Symposium. As noted by the attendance to this activity (**Appendixes #4: Signup sheets**) we continue attracting a diverse crowd. We have attracted not only researchers. To our activities, numerous clinicians, institutional and community leaders have attended. They have learned not only about basic and translational PCa cancer research with focus on disparities. They have also received a not complicated message on disease outcomes and behavioral intervention. Also community leaders and lay community members, attended to our activities this year. We are sure they will transmit our message to their communities.

5. CHANGES/PROBLEMS:

There are no problems to report.

There are no other changes or problems to report.

6. PRODUCTS: List any products resulting from the project during the reporting period.

Presentations: Fourteen (14) meeting presentations in the poster or oral format included work related to internships during the current report period. Trainees presented their work in local (11) and national (3) meetings such as the 2015 14th Research Symposium on Students' Summer Research Series at Tougaloo College (**Appendixes #5 and #7**); 2016 Mississippi College Undergraduate Research Symposium at Tougaloo College; 2016 Prostate Cancer Research Mini Symposium and 2016 Summer Undergraduate Research Symposium, both at UMMC; 2015 ABRCMS in Seattle, WA; 2016 Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM). Washington, D.C.

Website(s) or other Internet site(s):

Course webpage: <http://www.cancer.org/cancer/prostatecancer/detailedguide/prostate-cancer-key-statistics>

The webpage informs prospective applicants about eligibility requirements, Program components, Summer Research internship, housing assistance, application packet, contact information and news (**Appendix#1**; for the Course webpage screenshot).

We have generated two social media resources. (**Appendix # 18** for social media resources screen shoots).

The Facebook group: <https://www.facebook.com/groups/675020649225547/>

The LinkedIn group: <https://www.linkedin.com/grp/home?gid=6660607>

Periodically, the UMMC-Cancer Institute Facebook is reporting on our Program:


<https://www.facebook.com/The-Cancer-Institute-at-UMMC-485738241532013/>

These 4 resources provide powerful tools to obtain continuous tracking, promote engagement, interaction and professional networking, helping professional work' dissemination; and supporting developing of professional presence. Additionally, the social media resources are used as tools to educate the public about trainees' experience in the Program and as a way to increase public awareness of PCa research performed by minorities.

Educational aids or curricula: The development of the summer training course demanded an intensive curriculum. For details about the course program refer to **Appendix #3**.

7. APPENDIXES

Appendix #1: UMMC WEBPAGE









Cancer Institute
The University of Mississippi Medical Center

CONTENT A-Z | DIRECTORY | E-MAIL LOGIN | MAPS | MYCHART | MY UMMC


WELCOME

UMMC Home | About UMMC | Education | Health Care | Research | Administration | Library | Giving

UMMC Home > Administration > Centers and Institutes > Cancer Institute



HBCU Class of 2016



Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

Undergraduate students participating in the third HBCU Prostate Cancer Research Training Program completed their 10-week summer internship by making presentations at the 2016 Prostate Cancer Research Mini Symposium. The students, from Jackson State University and Tougaloo College, with UMMC representatives, are from left, Dr. Timothy Turner, Jackson State University professor and chairman, Department of Biology; Omelia Amoah, JSU student and HBCU participant; Courtney Mangum, Tougaloo College student and HBCU participant; Diva Whalen, HBCU alum and Meharry Medical College graduate student; Dr. Jinghe Mao, Tougaloo College professor and chairman, Department of Biology; Dr. Christian Gomez, UMMC associate professor of pathology and radiation oncology and Cancer Institute's HBCU program advisor; Dr. Keli Xu, UMMC assistant professor of neurobiology and anatomical sciences and Cancer Institute member.

Connect with UMMC - HBCU: Prostate Cancer Research Training on Facebook and LinkedIn.

Supported by the U.S. Department of Defense Prostate Cancer Research Program

Our goal is to train undergraduate students from two Historically Black Colleges and Universities. Tougaloo

CANCER INSTITUTE

- ▶ Cancer Institute Home
- ▶ About Us
- ▶ Cancer Research and Registry
- ▶ Cancer Research
- ▶ Clinical Trials
- ▶ Contact Us
- ▶ Donors
- ▶ Education and Training
 - ▶ 70x2020 Initiative
- ▶ **Research Training Program**
- ▶ School of Dentistry
- ▶ School of Graduate Studies
- ▶ School of Health Related Professions
- ▶ School of Medicine
- ▶ School of Nursing
- ▶ School of Pharmacy
- ▶ Faculty
- ▶ Locations
- ▶ News
- ▶ Upcoming Events

Appendix #2: Program flyer



2016 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

Summer Experience in Cancer Health Disparities
at the University of Mississippi-Cancer Institute

Supported by the U.S. Department of Defense Prostate Cancer Research Program

Purpose: To train undergraduate students from Tougaloo College and Jackson State University so they can gain experience in performing prostate cancer research at the University of Mississippi Medical Center (UMMC)-Cancer Institute.

Duration: May 31, 2016 – August 5, 2016

Description: Students will participate in a 10-week comprehensive training program in Prostate Cancer research and care, perform hands on research, attend regular hosting lab meetings and a weekly one-on-one meeting with their mentors, attend research seminar series and lectures focused on prostate cancer, shadow clinicians, participate in a prostate cancer research symposium and prepare a final written report. Trainees will be involved in campus wide activities with undergraduates from other summer programs, learn about research programs at UMMC, postgraduate studies alternatives, graduate school application process, and will be provided opportunities in social settings to improve their networking and communication skills.

Financial: Successful applicants will receive a \$6,000 stipend.

Eligibility: Applicants must be U.S. citizens, permanent residents or legal aliens who are pursuing a major in the life sciences, sophomores or junior standing for the upcoming fall semester, have successfully completed one semester of math and one year of sciences (biology, chemistry or physics), science grade point average of at least 3.0 at the time of submission, and have the intention of pursuing a Ph.D. after graduation.

Application package (available at www.umc.edu/researchtraining):

1. Complete Mississippi Prostate Cancer HBCU Undergraduate Research Training Program application form
2. A written personal statement
3. Provide resume
4. Provide two letters of recommendation (one of which is completed by a STEM instructor)
5. Official transcripts of undergraduate grades

Deadline: March 28, 2016, 6PM CT

Notification: On or before May 1, 2016

Information: (www.umc.edu/researchtraining)

Veronica Mayes UMMC Cancer Institute 2500 North State Street Jackson, MS 39216 601-815-6802 (phone) 601-815-6806 (fax) vmayes@umc.edu	Jinghe Mao, Ph.D. Tougaloo College 500 W. County Line Rd. Tougaloo, MS 39174 601-977-4450 (phone) 601-977-7898 (fax) jmao@tougaloo.edu	Stephen I. Ekunwe, Ph.D. Jackson State University 1400 J.R. Lynch Street Jackson, MS 39217 601-979-2586 (phone) 601-979-5853 (fax) stephen.i.ekunwe@jsums.edu
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Appendix #3: Research Training Programs for 2016

2016 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

May 31, 2016 – August 5, 2016

Time table:

Time Table for Summer Program Training Plan										
	wk 1	wk 2	wk 3	wk 4	wk 5	wk 6	wk 7	wk 8	wk 9	wk 10
Lab research										
Lectures										
Clinical shadow										
Presentation										

Research Mentors:

Mentor	Research specialty	Teaching	Department
Gene Bidwell, Ph.D.	Targeted drug delivery	Biochem, Mol Onc	Neurology and Biochemistry
Christian Gomez, Ph.D.	Tumor microenvironment in PCa	Mol Onc, Biochem	Pathology Cancer Institute
Wael M. ElShamy, Ph.D.	Cell signaling in cancer	Mol Onc	Radiation Oncology, Cancer Institute
Joseph Maher, M.D.	Cell-fate determination in development and oncogenesis	Mol Onc	Medicine, Cancer Institute
Yin-Yuan Mo, Ph.D.	Non-coding RNA in PCa and breast cancer	Mol Onc, Cell Bio, Microbiol	Pharmacology Cancer Institute
Radhika Pochampally, Ph.D.	MicroRNA and stem cell in PCa	Mol Onc	Biochemistry Cancer Institute
Drazen Raucher, Ph.D.	Targeted drug delivery	Mol Onc, Biochem, Res Methods in Cell Bio	Biochemistry Cancer Institute
Xeli Xu, Ph.D.	Cancer stem cells	Mol Onc	Neurobiology & Anatomical Sciences Cancer Institute
Xinchun Zhou, M.D., Ph.D.	Lipogenesis and marker discovery in PCa	Epidem, Infect Dis	Pathology Cancer Institute

Faculty Advisors:

Advisor	Institution	Department
Jinghe Mao, Ph.D., Professor	Tougaloo College	Biology
Stephen I. N. Ekunwe, Ph.D., Professor	Jackson State University	Biology

Internal Advisory Committee Members:

Member	Institution	Department
Srinivasan Vijayakumar, M.D., Professor, Director and Chairman	University of Mississippi Medical Center	Cancer Institute Radiation Oncology
Roy J. Duhé, Ph.D., Professor, Associate Director	University of Mississippi Medical Center	Pharmacology and Toxicology Cancer Education – UMMC CI

Lab rotations: Half-a-day activity. Students will visit labs involved in prostate cancer research at UMMC-Cancer Institute, Tougaloo College, and Jackson State University. Students will also attend lab meetings, discuss with lab PI or manager about the general lab research focus, and shadow a postdoc or graduate student.

Lecture program:

Location: Cancer Institute Conference Room 6th floor, G-651. **Time:** Mondays 9:00 a.m. – 10:00 a.m.

Mississippi Prostate Cancer HBCU Undergraduate Research Training Program-Lecture Syllabus			
Lecture	Date	Topic	Instructor and Organizational Affiliation
1	June 6, 2016	Basic Cancer Biology	Yin-yuan Mo, Ph.D., Professor, Department of Pharmacology and Toxicology. Director, Cancer Genetics Program, UMMC – Cancer Institute
2	June 13, 2016	Prostate Cancer Biology	Avinash Kumar, Ph.D., Postdoctoral Fellow, UMMC – Cancer Institute
3	June 20, 2016	Prostate Cancer Markers	Christian Gomez, Ph.D., Associate Professor, Department of Pathology, UMMC – Cancer Institute
4	June 27, 2016	Prostate Cancer Therapeutics	Roy J. Duhé, Ph.D., Professor, Department of Pharmacology and Toxicology, Associate Director for Cancer Education, UMMC – Cancer Institute
5	July 11, 2016	Prostate Cancer Clinical Science	Satya Packianathan, M.D., Ph.D., Assistant Professor, Department of Radiation Oncology, UMMC
6	July 18, 2016	Prostate Cancer Disparities in Mississippi	Deirdre B. Rogers, M.S., C.T.R., Director, Mississippi Cancer Registry, UMMC
7	July 25, 2016	Myrlie Evers-Williams Institute for the Elimination of Health Disparities	Marino A. Bruce, Ph.D., M.S.R.C., M.Div., C.R.C., Science Director, Myrlie Evers-Williams Institute for the Elimination of Health Disparities; Founding Director, Center for Health of Minority Males (C-HMM); Program Administrator, HBCU PRIDE
8	August 1, 2016	Careers in Prostate Cancer Research and Round Table	Moderator: Christian Gomez, Ph.D., UMMC Cancer Institute Panelists: Srinivasan Vijayakumar, M.D, Director, UMMC Cancer Institute; Jinghe Mao, Ph.D., Biology Department, Tougaloo College; and Stephen I. N. Ekunwe Ph.D., Biology Department, Jackson State University

Clinical Shadow:

Clinical shadow (Wednesday, weeks 3, 4, and 5): Students will shadow a clinician, resident, or staff. This activity will occur once a week and will also include touring of the PCa treatment-related facilities between 2-3 hours.

Clinical Mentors	Week	Dates	Mentor
Charles R. Pound, M.D., Professor, Department of Medicine, Chief of the Division of Urology	3	June 15, 2016	Dr. Pound
R. Darryl Hamilton, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology; Louis V. Punecky, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology; Natale Sheehan, M.D., Assistant Professor, Department of Medicine, Division of Hematology and Oncology	4	June 22, 2016	Dr. Hamilton Dr. Punecky Dr. Sheehan (8:30am-10:30am)
Srinivasan Vijayakumar, M.D., Director, Cancer Institute and Chairman of Radiation Oncology	5	June 29, 2016	Dr. Vijay

Prostate Cancer Research Mini Symposium: Wednesday, August 3, 2016 from 9-12 pm. The symposium will be held in the UMMC Campus. The program will include presentations by trainees, Cancer Institute PCa researchers, and invited keynote PCa researchers.

Appendix #4: 2016 Mini Symposium Sign in Sheets

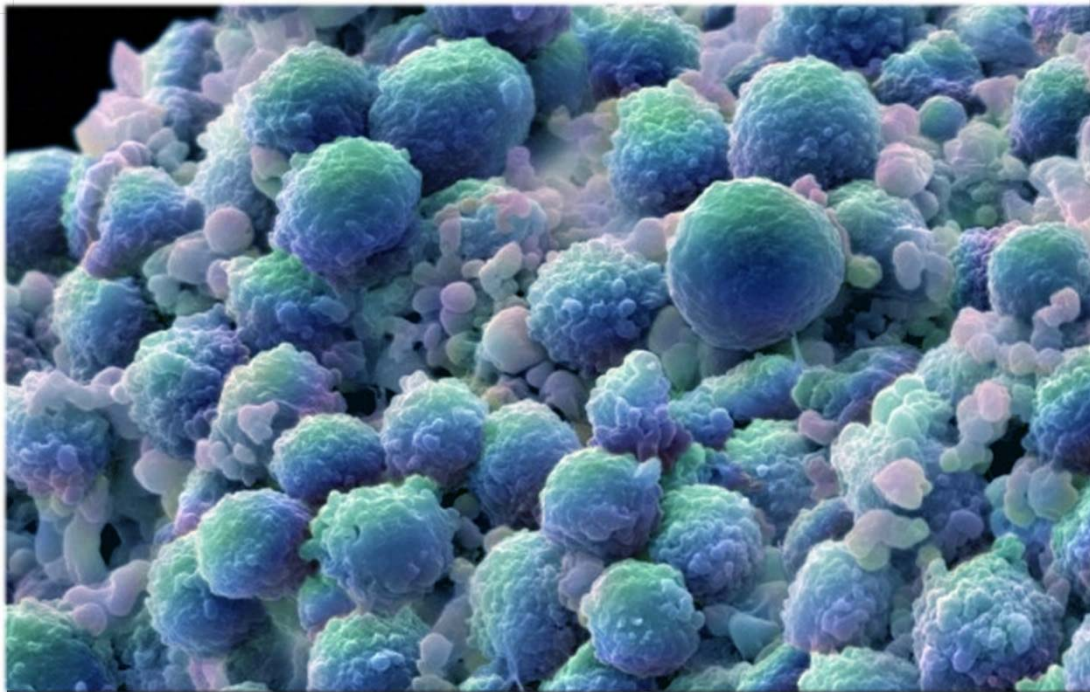
MEETING SIGN-IN SHEET			
Project: 2016 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program Symposium		Meeting Date: 3 August 2016	
Facilitator: Dr. Christian Gomez		Place/Room: R153	
Name	University / College / Company	E-Mail	
1. Diva Whaley	Mechanney Medical	dwhalne@live.com	
2. Cynthia Weller	UMMC CI	awelder2@umc.edu	
3. Amit Reddy	UMMC	loday@umc.edu	
4. Andrew Day	UMMC	Svijagabow@umc.edu	
5. S. V. Aravindhan	UMMC CI	crgung@umc.edu	
6. Chastin Gore	UMMC CI	azbailey@umc.edu	
7. Amani Bailey	UMMC/JSU	Wijayakumar@umc.edu	
8. Vani Vijayakumar	UMMC	PCLAVB10@UMC.EDU	
9. Peter Paolo Chastin	UMMC	Abniski@umc.edu	
10. Abbye Bastin	UMMC	iespiuozgo@umc.edu	
11. Ingrid Espinoza	UMMC / Cancer Inst.	o.ruelle.anastasia@gmail.co	
12. O. Amiah	UMMC / JSU	timothy.tanne@jsu.us.edu	
13. Tim Tanne	Jackson State Univ	shirley@umc.edu	
14. Aunne Shly	UMC		

Name	University / College / Company	E-Mail
15. ELDRIN BHANNT	UMC	eldrin.bhannt@umc.edu
16. FRANCIS SUN SHIYIMA	UMC / CI	msakyama@umc.edu
17. VERNICA MAGES	UMMC / Cancer Institute	vmages@umc.edu
18. COURTNEY MANGUM	UMMC / Tongalo	courtmanuma@gmail.com
19. JINDEE CATHAN	UMMC / OIE MISS	jeastham@umc.edu
20. KELI XU	UMMC / CI	kxu@umc.edu
21. FLAVIA DE CARLO	UMC	fdccarlo@umc.edu
22. ROY J. DUHE	UMC	RDUHE@umc.edu
23. NASIR BATH	UMMC / CI	NBATH@umc.edu
24. JIN MARS	Tongalo	Jinm@Tongalo.edu
25. RINKU PARMAR	UMC	rparmar@umc.edu
26. GLORIA GUTHY	UMMC	
27. XU ZHANG	UMMC	xzhang2@umc.edu
28. MOHAMMED EL GASSIEN	UMC	
29. MAZIE ROBERT WHELEN		
30. CLARK HENEGAN	UMMC / CI	jhenegan@umc.edu

Name	University / College / Company	E-Mail
31. Sara da Palombara	UWisc	Saradapalombara@yahoo.it
32. Jingying Wang	UWisc	Zhang3@umc.edu
33. Richard Miller	Tongach	rmeginnis@tongach.edu
34. Wen-Chang Chung	UMMC	wcchung@umc.edu
35. Candela Diaz	UMC	sdiez3@umc.edu
36. Yolanda Nobles	UMMC	ynobles@umc.edu
37. Nikita Whalen	UMMC	nwhalen@gmail.com
38. Willie Goliday	UMMC	wgoliday@umc.edu
39. Terri Whitten	UWisc	—
40. Brenda Warden	UMMC	—
41. Xiao Peng	UMMC	Xzhang3@umc.edu
42.		
43.		
44.		
45.		
46.		

Name	University / College / Company	E-Mail
47. Hamza Patel	University (UMMC)	hamza.g.patel@vanderbilt.edu
48. Abednego Nii Adam Comney	Tougaloo College	nii.adam@yahoo.com
49. Quat L. Whalen	Tuskegee University	quat.whalen@gmail.com
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Appendix #5: 2016 Prostate Cancer Mini Symposium Poster and Agenda



2016 Prostate Cancer Research Mini Symposium

Wednesday, August 3rd, 2016

9:00 a.m. until 12:30 p.m.

**University of Mississippi Medical Center
Lower Amphitheater
Room R153**

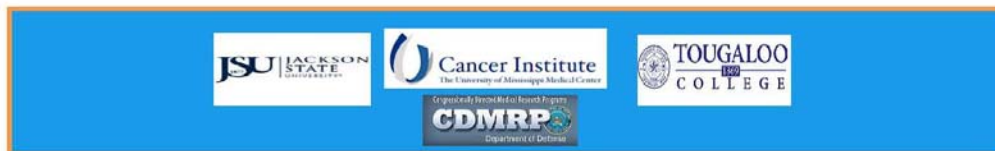
Registration will begin at 8:30 a.m.

More Information:

<https://www.umm.edu/researchtraining/>

Connect with UMMC - HBCU: Prostate Cancer Research Training on
Facebook and LinkedIn





AGENDA

2016 Prostate Cancer Research Mini Symposium

Wednesday, August 3, 2016

University of Mississippi Medical Center
UMMC Lower Amphitheater, R153
2500 North State Street
Jackson, MS 39216

8:30AM – 9:00AM

REGISTRATION

9:00AM – 9:05AM

WELCOME AND INTRODUCTION

Christian Gomez, Ph.D. Principal Investigator UMMC – HBCU: Prostate Cancer Research Training Program

9:05AM – 9:35AM

SPECIAL LECTURE

"Precision Medicine and Its Role in Overcoming Disparities in Health Care in Mississippi"

Srinivasan Vijayakumar, Director UMMC-Cancer Institute
Professor and Chairman, Department of Radiation Oncology
University of Mississippi Medical Center (UMMC)

9:35AM – 9:40AM

Discussion: Christian Gomez, Ph.D.
Associate Professor of Pathology and of Radiation Oncology,
member of the Cancer Institute Tumor Cell Biology Program,
Program Director UMMC – HBCU: Prostate Cancer Research
Training Program

9:40AM - 10:20AM

Session 1: Novel therapeutics approaches for prostate cancer

Moderator: Christian Gomez, Ph.D.
Associate Professor of Pathology and of Radiation Oncology,
member of the Cancer Institute Tumor Cell Biology Program,
Program Director UMMC – HBCU: Prostate Cancer Research
Training Program

9:40AM – 9:55AM

"Potential Roles of Lunatic Fringe and Notch in Aggressive Prostate Cancer"

Keli Xu, Ph.D.
Assistant Professor of Neurobiology and of Anatomical Sciences,
member of the Cancer Institute Tumor Cell Biology Program

9:55AM – 10:00AM

Discussion

10:00AM – 10:15AM

"Targeted Treatment of Prostate Cancer"

Timothy Turner, Ph.D.
Professor and Chairman Department of Biology,
Jackson State University

10:15AM – 10:20AM

Discussion

10:20AM – 10:30AM

COFFEE BREAK

10:30AM – 11:25PM

Session 2: Career Development

Moderator: Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College. Undergraduate Faculty Advisor UMMC – HBCU: Prostate Cancer Research Training Program

10:30AM – 10:45AM

"Novel Therapeutic Strategy using Dietary Bioactive Compound for Prostate Cancer"

Nasir Butt, Ph.D. Candidate. Co-mentors: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, member of the Cancer Institute Tumor Cell Biology Program, Program Director UMMC – HBCU: Prostate Cancer Research Training Program; Anait Levenson, M.D., Ph.D., Professor of Cancer Research and Pharmacology. Associate Dean for Research and Graduate Studies, Arnold & Marie Schwartz College of Pharmacy and Health Sciences, Long Island University – Brooklyn

10:45AM – 10:50AM

Discussion

10:50AM – 11:05AM	<p>“MHC Class I Polypeptide-Related Sequence A (MICA) as a Factor of Aggressive Prostate Cancer” Marcelo Sakiyama, Ph.D. Candidate. Mentor: Mentor: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, member of the Cancer Institute Tumor Cell Biology Program, Program Director UMMC – HBCU: Prostate Cancer Research Training Program</p>
11:05AM – 11:10AM	Discussion
11:10AM – 11:15AM	<p>“Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models” Courtney Mangum, UMMC – HBCU: Prostate Cancer Research Training Program student. Tougaloo College. Mentor: Keli Xu, Ph.D. Assistant Professor of Neurobiology and of Anatomical Sciences, member of the Cancer Institute Tumor Cell Biology Program</p>
11:15AM – 11:17AM	Discussion
11:17AM – 11:22AM	<p>“Effects of Hypoxia on the Aggressiveness of Prostate Cancer” Ornella Amoah, UMMC – HBCU: Prostate Cancer Research Training Program student. Jackson State University. Mentor: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, member of the Cancer Institute Tumor Cell Biology Program, Program Director UMMC – HBCU: Prostate Cancer Research Training Program</p>
11:22AM – 11:24AM	Discussion

11:25AM – 11:40AM	<p style="text-align: center;"><u>SPECIAL LECTURE</u></p> <p style="text-align: center;">“The Next Step: Success After the Program” Diva Whalen Graduate Student Meharry Medical College UMMC – HBCU: Prostate Cancer Research Training Program Class of 2014</p> <p style="text-align: center;">Introduction by Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College. Undergraduate Faculty Advisor UMMC – HBCU: Prostate Cancer Research Training Program</p>
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11:40AM – 11:45AM	Discussion
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11:45AM – 12:00PM

SPECIAL LECTURE

“Undergraduate Training for Biomedical Research at Tougaloo College”

Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College.
Undergraduate Faculty Advisor UMMC – HBCU: Prostate Cancer Research Training Program

Introduction by Roy J. Duhé Ph.D., Professor, Department of Pharmacology and Toxicology,
Associate Director for Cancer Education, UMMC – Cancer Institute. Member Advisory Committee
UMMC – HBCU: Prostate Cancer Research Training Program

12:00PM – 12:05PM

Discussion

12:05PM – 12:10PM

CLOSING REMARKS

Christian Gomez, Ph.D. Principal Investigator UMMC – HBCU: Prostate Cancer Research Training
Program

12:10PM – 1:00PM

BOX LUNCH

Appendix #6: 2016 Prostate Cancer Research Mini Symposium Pictures

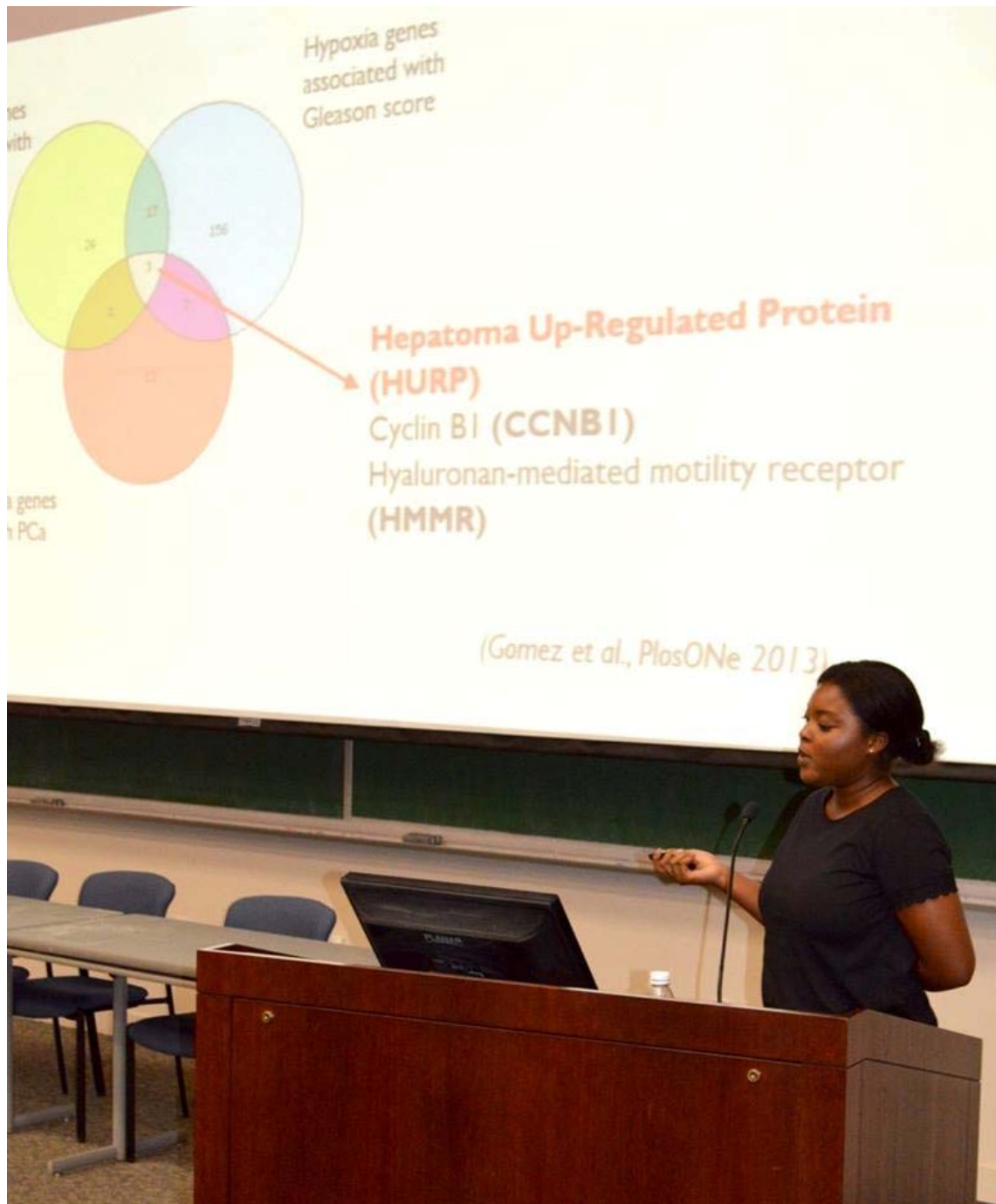
Speakers: Timothy Turner, Ph.D., Ornella Amoah (Class of 2016), Christian Gomez, Ph.D. (Program Director), Courtney Mangum (Class of 2016), Diva Whalen, M.S. (Class of 2014), Jinghe Mao, Ph.D., and Keli Xu, Ph.D.



Roy Duhe, Ph.D. (UMMC-Cancer Institute Associate Director of Cancer Education and UMMC-HBCU PCa Training Program advisory board member), Christian Gomez, Ph.D., (Program Director), Speakers: Jinghe Mao, Ph.D., Courtney Mangum (Class of 2016), Ornella Amoah (Class of 2016) and Srinivasan Vijayakumar, M.D.



Ornella Amoah (Class of 2016) presenting at 2016 Prostate Cancer Research Mini Symposium



Appendix #7: Summer Undergraduate Students Program for 2016

School of Graduate Studies in the Health Sciences



Summer Research Seminar Schedule

2016

June 3 (Safety Seminar—Room R153)

June 10 (Upper Amphitheater—Room R354)

Dr. Sean Didion (MD/PhD Program)

June 17 (Upper Amphitheater—Room R354)

Dr. Jan Williams (Pharmacology Program)

June 24 (Upper Amphitheater—Room R354)

Dr. Maureen Wirschell (Biochemistry Program)

July 1 (Lower Amphitheater—Room R153)

Dr. Michael Ryan (Physiology Program)

July 8 (Upper Amphitheater—Room R354)

Dr. Donna Platt (Neuroscience Program)

July 15 (Upper Amphitheater—Room R354)

Dr. Ryan Darling (Clinical Anatomy Program)

July 22 (Upper Amphitheater—Room R354)

Dr. Stephen Stray (Microbiology and Immunology)

July 29 (Upper Amphitheater—Room R354)

Dr. Amol Janorkar (Biomedical Materials Science Program)

August 5 Symposium—(Student Union)

Summer Students Activities 2016

SAFETY SEMINAR
June 3, 2016
R153 Lower Amphitheater

Name: Amanda Kinslow
Title: IACUC Training Coordinator
Department: Pathology, LAF (Laboratory Animal Facility)
Topics: Rules and Regulations governing the Privilege of Using Live Animals in Research
Time needed: 10-15 minutes

Name: Yolanda Griffin
Title: Biological Safety Officer
Department: Environmental Health and Safety
Topics: Blood Borne Pathogens, Hazardous Material and Lab Safety
Time needed: 15 minutes

Name: Jeff Pinter
Title: Fire Safety Specialist
Department: Environmental Health and Safety
Topics: General Safety, Fire safety procedures and Use of Fire Extinguishers
Time needed: 15 minutes

Name: Dale Tallman
Title: Safety Officer, Radiation/Laser
Department: Environmental Health and Safety
Topics: Radiation Safety and Laser Safety
Time needed: 15 minutes



Appendix #8: Summer Research Symposium 2016

POSTER PRESENTATIONS (cont.)

31. Rachel Pearson
Microbiology - Larry McDaniel

32. Alyssa Pennington
Pharmacology - Jan Williams

33. Jaren Reeves-Darby
Neuroscience - Donna Platt

34. Austin Slone
Neuroscience - James Rowlett

35. Jesse Smith
Neuroscience - Ray Grill

36. Evan Theilman
BMS - Jason Griggs

37. Adam Travis
BMS - Amol Janorkar

38. Olivia Travis
Pharmacology - Richard Roman

39. Emily Turbeville
Neuroscience - Lir Wan Fan

40. Amanda Williams
Pharmacology - Jenny Sasser

41. London Williams
Physiology - Eric George

REMEMBER TO APPLY FOR OUR PROGRAMS IN:

PhD Degrees

Biochemistry
Biomedical Materials Science
Clinical Anatomy
Medical Pharmacology
Microbiology and Immunology
Neuroscience
Nursing
Pathology
Physiology and Biophysics

MS Degrees

Biomedical Materials Science
Biomedical Sciences
Clinical Anatomy
Clinical Investigation
Pathology

Please visit our webpage: www.umm.edu/graduateschool/

A very special thank you to all of the mentors, postdocs
and graduate students who guided
the summer undergraduate researchers
during the summer of 2016.

**UMMC**
School of Graduate Studies
in the Health Sciences



**SUMMER
UNDERGRADUATE
RESEARCH
SYMPOSIUM**

August 5, 2016
Norman C. Nelson Student Union

**SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM
August 5, 2016**

Program Director.....Dr. Mike Ryan

Program Administrators.....Mary Canterbury
and Dorothea Staursky

9:00 - 9:30 **BREAKFAST RECEPTION**
Student Union Conference Center

9:30 - 12:00 **ORAL PRESENTATIONS**

1. Nathan Campbell
Pharmacology - Babbette LaMarca

2. Nick Bohannon
Physiology - Barbara Alexander

3. Stephanie Njemanze
Biochemistry - Damian Romero

4. Olivia Travis
Pharmacology - Richard Roman

5. Ashley Max
BMS - Michael Roach

6. Chelsea Luckett
Physiology - Ji Li

7. Evan Theilman
BMS - Jason Griggs

8. Ornella Amaoh
Cancer Institute - Christian Gomez

9. Douglas Campbell
Microbiology - Stephen Stray

10. Courtney Mangum
Cancer Institute - Keli Xu

11. Amanda Blackwell
Neuroscience - James Shaffery

12. Rachel Pearson
Microbiology - Larry McDaniel

13. Sam Palmer
Clinical Anatomy - Dongmei Cui

14. Jaren Reeves-Darby
Neuroscience - Donna Platt

15. Liam Armstrong
Pathology - Xiu Liu

12:00 - 1:00 **LUNCHEON**
By Invitation Only - Student Union Conference Center

1:00 - 2:30 **POSTER PRESENTATIONS/DESSERT RECEPTION**
Student Union Conference Center

1. Ornella Amaoh
Cancer Institute - Christian Gomez

2. Nandini Aravindan
Neuroscience - Bernadette Grayson

3. Liam Armstrong
Pathology - Xiu Liu

4. Amanda Blackwell
Neuroscience - James Shaffery

5. Nick Bohannon
Physiology - Barbara Alexander

6. Parker Brewster
Radiology - Andrew Smith

7. Nathan Campbell
Pharmacology - Babbette LaMarca

8. Douglas Campbell
Microbiology - Stephen Stray

9. Julius Chembo
Physiology - Mike Ryan

10. Lan Chen
Neuroscience - Hong Zhu

11. Josh Cotton
Pharmacology - Sydney Murphy

12. Anthony Covacevich
Pathology - Xiu Liu

13. Charles Davis
Microbiology - Mary Marquart

14. Braxton Dupuy
Neuroscience - Lique Coolen

15. Shelley Rae Edwards
Neuroscience - Kevin Freeman

16. Briana Fizer
Pharmacology - Jan Williams

17. Ashley Gnam
Pharmacology - Denise Cornelius

18. Alex Griggs
Physiology - David Stec

19. Yang He
Microbiology - Melanie Wilson

20. Bo Key
BMS - Jason Griggs

21. Mark Lewis
Pharmacology - Elise Gomez-Sanchez

22. Simone Lewis
Neuroscience - Paul May/Susan Warren

23. Chelsea Luckett
Physiology - Ji Li

24. Courtney Mangum
Cancer Institute - Keli Xu

25. Ashley Max
BMS - Michael Roach

26. Destiny Mitchell
Physiology - Romain Harmancey

27. Henry Nguyen
Microbiology - Ritesh Tandon

28. Stephanie Njemanze
Biochemistry - Damian Romero

29. Sam Palmer
Clinical Anatomy - Dongmei Cui

30. Jamie Paul
Neuroscience - Courtney Bagge

Ornella Amoah poster presentation at Summer Undergraduate Research Symposium 2016



Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models

Courtney Mangum¹, Wen-Cheng Chung², Keli Xu^{2,3}

¹Biology Department, Tougaloo College, Tougaloo, MS; ²Cancer Institute, University of Mississippi Medical Center, Jackson, MS; ³Department of Neurobiology and Anatomical Sciences, University of Mississippi Medical Center, Jackson, MS

Lunatic Fringe (Lfng), a Notch modulator, plays a tumor-suppressive role in the prostate. Loss of Lfng causes expansion of stem-like cells in the prostate basal epithelium and increased cell proliferation, which in turn results in prostatic intraepithelial neoplasia (PIN), abnormal morphological structures of epithelial cells. PIN may turn into an aggressive form of prostate cancer (PCa) via epithelial-mesenchymal transition (EMT). EMT is characterized by an up-regulation of mesenchymal marker, Vimentin and down-regulation of epithelial marker, E-Cadherin. Using Probasin-Cre4, we have genetically engineered mice models (GEMMs) with Lfng deletion in combination with the deletion of tumor suppressive p53 or activation of oncogenic Kras. Prior experiments have shown accelerated PIN development in these models; therefore, we hypothesize that Lfng deletion in combination with p53 deletion or Kras activation will accelerate EMT development in GEMMs. After breeding and genotyping, we isolated and dissected prostate tissue from mice with experimental genotypes Pb-Cre4/Lfng/Kras and Pb-Cre4/Lfng/p53, and control genotypes Pb-Cre4/Lfng and Lfng/p53. The Western blot results showed an intense up-regulation of Vimentin and a modest up-regulation in the E-Cadherin expression in the Pb-Cre4/Lfng/p53 mice model, which may suggest EMT in addition to increased epithelial proliferation. However in opposition to our hypothesis, the Pb-Cre4/Lfng/Kras mice model resulted in up-regulated E-cadherin and down-regulated Vimentin expressions. This does not suggest EMT in this model. Due to the timeliness of mice breeding and prostate cancer progression, more studies will be needed to test for the mechanisms underlying PCa progression in the Lfng/Notch-regulated GEMMs. These preliminary results may show that different pathways are used during pathogenesis of aggressive forms of PCa.

Financial Support: Start-up funds from the UMMC Cancer Institute, The University of Mississippi Medical Center, HBCU Summer Research Training Program and the Gomez lab. Financial Support: PC131783 (HBCU-UMMC PCRP).

Effects of Hypoxia on the Aggressiveness of PCa

Ornella Amoah¹, Ingrid Espinoza^{2,3}, Hamza Patel⁴, Christian Gomez^{2,3,5}

¹Department of Chemistry, Jackson State University, Jackson, MS, ²Cancer Institute, University of Mississippi Medical Center, Jackson, MS, ³Department of Biochemistry, Mississippi Medical Center, Jackson, MS, ⁴Vanderbilt University, Nashville, TN, ⁵Department of Pathology and Radiation Oncology, Mississippi Medical Center, Jackson, MS

Tumor hypoxia results from insufficient supply of oxygen to certain areas of the tissue and has been linked to malignant progression, metastasis, resistance to therapy, and poor clinical outcome of cancers in recent publications. In prostate tumor cells, evidence has been shown that the tissue cells thrive in moderately hypoxic conditions. Hypoxia may very well exist in both benign and malignant prostate cells.

The expression of hypoxia-controlled proteins is associated with aggressiveness of prostate cancer. LNCaP cells overexpressed with HURP and their derived cell lines C4-2B, a more progressed form of PCa, were utilized in our experiments. Our objective is to establish a correlation between tumor hypoxia and aggressiveness of prostate cancer through the observation of intensity of hypoxia-associated molecules (HURP and HIF-1 α) in prostate tumors and cancer cell lines. To test our hypothesis we used in-vitro cell lines and patient derived immunostaining.

Two forms of hypoxia treatment were used during the course of this experiment, incubation at 37°C in humidified air enriched 5% CO₂ with 2% O₂ content and cell exposure to Cobalt (II) Chloride. We used 8%-12% SDS-PAGE gels and Western blot analysis to detect the expression our proteins: hypoxia- inducible factor-1 (HIF-1 α), to show the up-regulation of hypoxia in the tumor, hepatoma upregulated protein (HURP) as a predictive marker for aggressive PCa, Beta-actin and GAPDH as loading internal controls. We utilized LNCaP cells overexpressed with HURP and their derived cell lines C4-2B, more progressed forms of PCa. The Gomez lab has published evidence demonstration HURP as an independent biomarker for aggressive PCa, these findings allowed us to use HURP as a marker. The PCa patient tissue immunostaining was done in the lab and scored by a pathologist. 0 being low grade and 3 being high grade cancer.

Thirty-four PCa patient malignant tumors were analyzed after immunostaining for HIF-1 α and Gleason scores were obtained. We found a trend in our analysis which showed an increased HIF-1 α staining, in many cases, had an increase in Gleason score as well. More patient data should be collected to illustration these results at higher values. The LNCaP and C4-2B treated with CoCl₂ clearly showed a consistent up-regulation of HIF-1 α , however we were not able to analysis for HURP in these lines. HURP and HIF-1 α expression is up- regulated under hypoxia incubation as well.

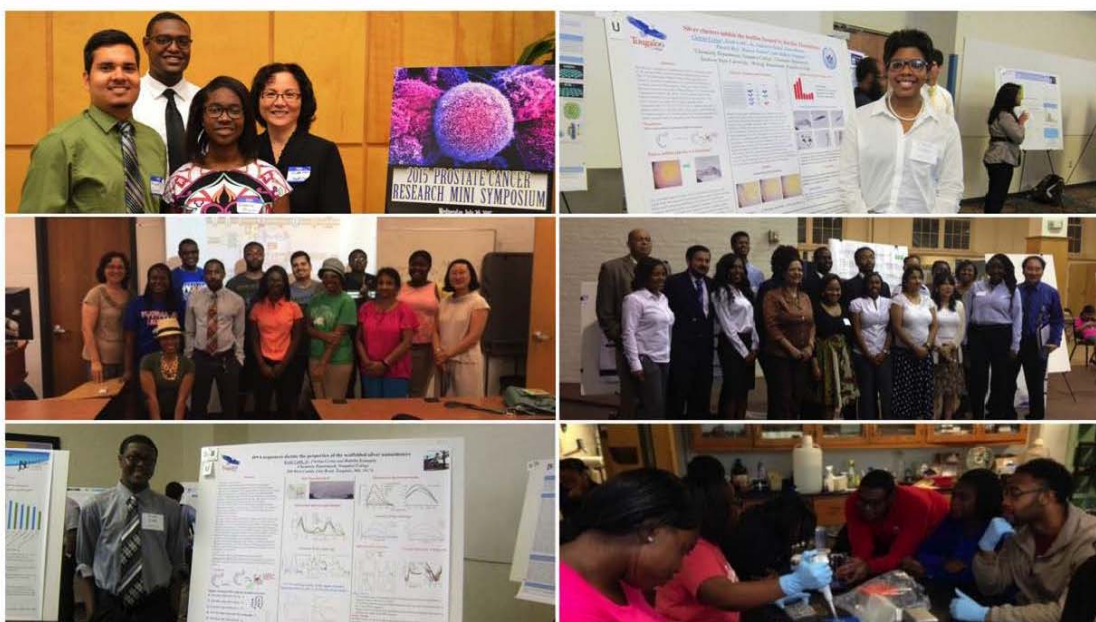
Financial Support: PC131783 (HBCU-UMMC PCRP)

14th Research Symposium on Students' Summer Research Series

Natural Science Division
Tougaloo College

Tougaloo, MS 39174
October 16 – 17, 2015

2015 Abstracts



Sponsored by: HHMI/Kincheloe Society

2015 14th TC Research Day Program ctd. (HCBU trainees highlighted in blue)

**Poster Demonstrations
Kincheloe Hall
October 16th 2015
10:00-11:00 AM; 12:00-1:00 PM**

Page	Name	Major	Research Institution
1	Waynesha E. Blaylock	Biology	U.T. MD Anderson Cancer Center, Houston, Texas
2	Nateasha Carter	Biology	University of Texas Southwestern Medical Center
3	Dominique Clark	Biology	Mississippi State University,
4	Keith Cobb	Biology	Tougaloo College
5	Acacia Cooper	Biology	Virginia Tech
6	Christa Corley	Biology	Tougaloo College
7	Karien Dixon	Chemistry	St. Jude Children's Research Hospital, Memphis
8	Dominique Foster	Biology	Tougaloo College
9	Angel Garcia	Biology	University of Mississippi Medical Center
10	Kelli Gutter	Biology	University of Mississippi Medical Center
11	Brandon Hackett	Biology	Tougaloo College
12	Trianna Humphrey	Biology	University of Mississippi Medical Center
13	Aswad Jackson	Biology	University at Buffalo
14	Sharrall Jenkins	Biology	Brown University
15	Tembra Jones	Biology	Base pair Program, University of Mississippi Medical Center
16	Jessica McKenzie	Biology	University of Mississippi Medical Center
17	Le'Andrea Mitchell	Biology	MS State Dept. of Health
18	Josiah Moore	Chemistry	University of Alabama, Tuscaloosa
19	Kendrique Morgan	Biology	University at Buffalo
20	Maria Muhammad	Chemistry	University of Mississippi Medical Center
21	Charles Phillips	Biology	University of Mississippi Medical Center
22	Courtney Sims	Chemistry	University of Mississippi Medical Center
23	Shantasia Thomas	Biology	Case Western Reserve

2015 14th TC Research Day Program ctd. (HCBU trainees highlighted in blue)

			University
24	Alexandria Thompson	Biology	Tougaloo College
25	Corey Walters	Chemistry	University of Mississippi
26	Aurora Washington	Biology	Brown University
27	Maurice Whalen	Biology	Brown University
28	Shenequa Wilson	Biology	University of Mississippi
37	Raquema Williams	Biology	Tougaloo College

**Oral Presentations
Kincheloe 106 Lecture Room
October 17th 2015
8:30-11:30 AM**

Page	Name	Major	Research Institutions
29	Timera Brown	Biology	University of Mississippi Medical Center
30	Michael Cleveland	Biology	Community Liaison DeKalb County Board of Health
31	Breland Crudup	Biology	Brigham and Women's Hospital
32	Kembe Keys	Chemistry	SMDEP, Ohio
33	Courtney Mangum	Biology	State University of NY, Buffalo
34	Angelyn Martin	Biology	Mississippi State University
35	Jonathan Moore	Biology	Brown University
36	Jonathan Taylor	Math and Computer Science	Engineer Research and Development Center- Information Technology Lab

Appendix #11: Awards

Anthony Keyes poster presentation award at ABRCMS 2015



Anthony Keyes acceptance letter for REU Summer Program in University of Illinois

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Department of Chemistry

School of Chemical Sciences
463 Roger Adams Laboratory, Box 48, MC-712
600 South Mathews Avenue
Urbana, IL 61801



March 6, 2015

Anthony Keyes
1314 Diamond Rim Drive
Colorado Springs, CO 80921

Dear Mr. Keyes:

Congratulations on your selection to participate in the Illinois Research Experience for Undergraduates (REU) program, sponsored by the U.S. National Science Foundation and the 3M Foundation. If you accept, you will be doing research with Dr. Paul Hergenrother, hergenro@illinois.edu. You will also participate in a variety of educational and social activities with other REU attendees.

The REU program offers housing in Urbana, reimbursement of your travel expenses to Urbana (coach-class round trip or mileage if you drive), \$800 for living expenses and a \$5,000 stipend, the payment of which will be paid in 3 installments on or around 6/1, 7/1, 8/7. Taxes will not be withheld from this stipend and this income is reportable to taxing agencies. Housing will be at Europa House (<http://www.europa-house.org/>) a few blocks from Chemistry. Chemistry pays for this housing directly, so extraordinary circumstances are required to justify alternative housing arrangements.

If you accept our offer, we ask that you arrive in Urbana on Sunday, May 31, 2015, and start the program on Monday, June 1, 2015. The program concludes on Friday, August 7, 2015, with check-out on August 8, 2015. The program will last for a total of ten weeks. In order to facilitate the stipend arrangements, Staci Ryan (staciry@illinois.edu, 217-244-0565), will contact you regarding the process. Please also confirm your start date with her. We recognize that not all schools are done for the year in late May; while we cannot extend the completion of the program past August 7, we can be flexible on the start date.

Ms. Ryan will be contacting you again soon with more information on the program details, additional paperwork that will need to be completed for you to register for the course associated with this REU program (at no cost to you) and research project assignments. **Please let us know by Monday, March 9 if you accept this offer.** If you have already accepted another position for the summer, please let us know as soon as you can so that we may offer your spot to another applicant.

For your travel here and back, there is a simple and economical procedure. If you will be flying to Urbana-Champaign, we will issue the ticket for you with the help of our agents at Suzi Davis Travel. If you will be driving to Urbana-Champaign, please note the mileage for your trip here so we can process a reimbursement request for you upon your arrival.

Finally, because the REU funders maintain a keen interest in the summer scholars, I ask that you prepare a brief account (one to two pages in length) before your departure describing your personal and educational background, your interests and plans for the future and, in general terms, a brief report on the project you undertook over the summer. You will also present a poster on your research during the last week of the program, and a PDF of that poster should be turned in before you leave Urbana.

Once again, congratulations, and I look forward to hearing your decision about this offer by **Monday, March 9, 2015.**



Sincerely,

Alexander Scheeline
Professor of Chemistry Emeritus


telephone 217-333-2999 • fax 217-265-6290
email scheelin@scs.illinois.edu • url http://www.chemistry.illinois.edu/faculty/Alexander_Scheeline.html

Anthony Keyes research experience in Chemistry Laboratory of Organic Polymers

(<http://www.u-bordeaux.com/Education/Exchange-Programs/Incoming-international-students-in-Bordeaux>)

ity of Bordeaux ▾ | Education ▾ | Research ▾ | Welcome to Bordeaux ▾ |  | 

Rashid Chatani at LIRYC: click to discover his portrait ▾

 *...a great experience... conducting cutting-edge research. »*

Anthony Keyes at LCPO: click to discover his portrait ^

Anthony Keyes (Jackson State University) / Host laboratory: LCPO*
under the supervision of Olivier Sandre

"The reason that I have come to Bordeaux is to do **quality research**. I will be working on optimizing the polyol synthesis, a popular method to produce metal nanoparticles. I will be focusing specifically on producing iron oxide nanoparticles, which can be used as MRI contrast agents and even therapeutic agents for cancer. I hope that during my stay here in Bordeaux, I will be able to produce results that impact the further synthesis of iron oxide nanoparticles.

The main aim of my visit is to dedicate myself to my research and to enjoy my time working in the laboratory. So far, I have discovered **many bright minds within the university** and I have made a few friends. Being so far from my home country is relaxing and allows me to focus entirely on my personal growth. At the end of the program, I hope I will make many scientific connections and, most importantly, enjoy my stay in France".

* Chemistry Laboratory of Organic Polymers

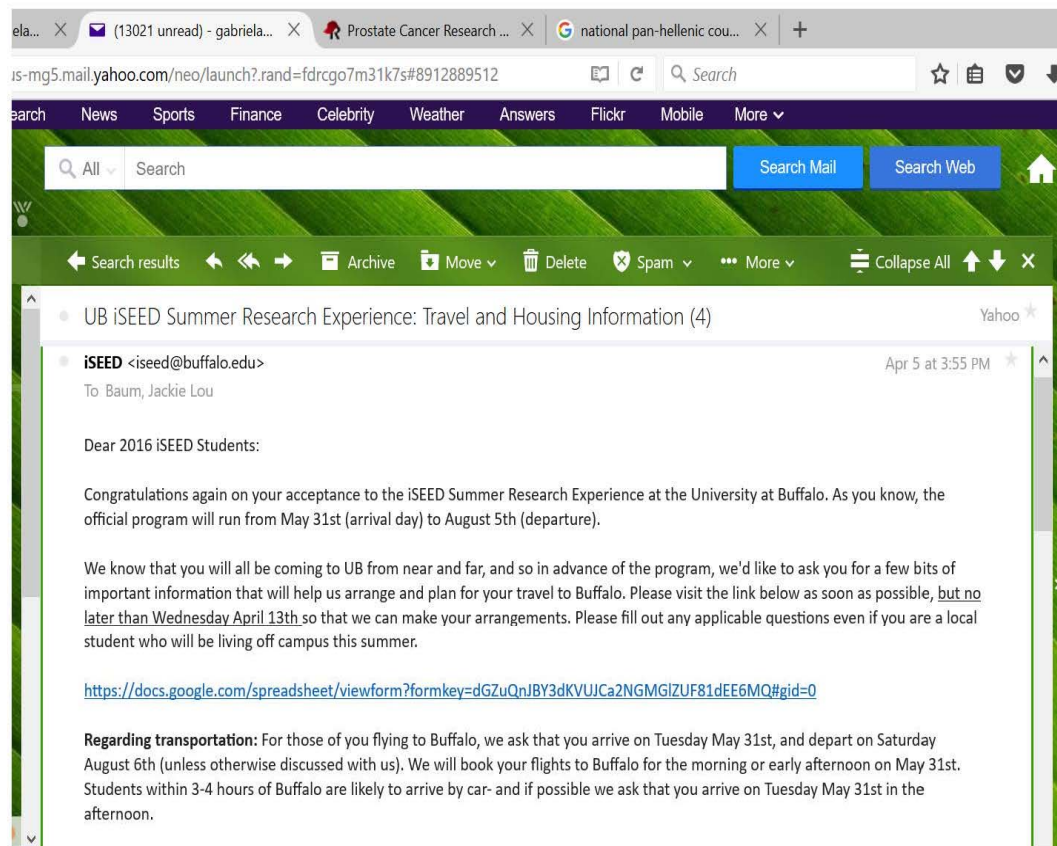
Angel Garcia award at Tougaloo College Undergraduate Research Symposium



Angel Garcia poster presentation award at NSD Research Symposium 2015



Angel Garcia acceptance letter for iSEED Summer Research Experience program at the University at Buffalo



Jamal Keyes acceptance letter to REU-CB at Rutgers



February 10, 2016

Dear Jamal,

Congratulations! We are delighted to accept you to our 2016 summer research program, RiSE (Research in Science and Engineering) at Rutgers through the NSF Research Experience for Undergraduates in Cellular Bioengineering (REU-CB). You should feel very proud of yourself -admission is highly selective. We are impressed with your credentials and expect that you will have a rewarding, exciting, and enjoyable summer.

Please let us know no later than, **February 24, 2016 by 9:00 AM**, if you accept our offer by completing the form in the body of our e-mail and replying to: rise@rci.rutgers.edu.

Please note:

- You will be matched with one of the Cellular Bioengineering faculty mentors. On our application, you specified your research interests and may have answered an optional question to indicate prospective faculty mentors. We will use the information from your application as a guide to your placement. If you wish to update that information, please do so in your reply form. Every effort will be made to match you with one of your preferred choices.
- You will receive a generous stipend of \$5,000 for 10 weeks. We also provide a preparatory course for the GRE (valued at \$900), free housing in on-campus apartments, and travel reimbursement up to \$500.
- RiSE/REU-CB dates are May 31 to August 5, 2016. Housing check-in will be Sunday, May 29, 2016. (Anything later is by special arrangement only).

Once you accept our offer, you are expected to withdraw applications from any other summer opportunities.

Participation in RiSE is a full-time commitment. Therefore, you should not plan to take courses or accept additional employment while in the program.

As a RiSE Scholar, you will be eligible for our prestigious **SUMmer Pipeline to Excellence at Rutgers Graduate (SUPER Grad)** fellowship program if you return to Rutgers for graduate study. Learn more [here](#).

If you have any questions, do not hesitate to contact us at **848-932-6584** or rise@rci.rutgers.edu. We are confident you will have a great summer and are excited at the prospect of welcoming you to Rutgers!

Sincerely,

A handwritten signature in black ink, appearing to read "David Shreiber".

Director, NSF REU in Cellular Bioengineering: From Biomaterials to Stem Cells
Shreiber@rci.rutgers.edu

A handwritten signature in black ink, appearing to read "Evelyn S. Erenrich".

Evelyn S. Erenrich, Ph.D.
Director, RiSE at Rutgers
Erenrich@rutgers.edu



Timera Brown acceptance letter to VINSE Summer REU Program at Vanderbilt University



**VANDERBILT
UNIVERSITY**

Vanderbilt Institute of Nanoscale Science and Engineering

February 18, 2016

Timera Brown
P.O. Box 477
Richton, MS 39476-0477

Dear Timera:

I am pleased to inform you that you have been accepted as a summer research intern in the Vanderbilt Institute for Nanoscale Science and Engineering (VINSE) NSF funded summer REU program.

Participants in the ten-week program will receive a \$5,000 stipend, campus housing at no additional cost, a meal allowance, and up to \$500 to cover the cost of travel to and from Nashville. Scientifically, participation in the program will provide you with a true interdisciplinary research experience in an environment where physicists, chemists, biologists, and all engineers collaboratively solve problems and create new scientific understanding. You will work directly with VINSE faculty members and their research groups and have access to the state-of-the-art VINSE laboratories, which are shared facilities available to all authorized users. The 10 week program will also feature weekly informal seminars, workshops, field trips and a final banquet and poster competition, at which you will have the opportunity to compete with your fellow interns for travel funds to present at a national conference, such as the American Chemical Society annual meeting.

Vanderbilt represents one of the most exciting academic environments in the United States. We are ranked #15 in the US News and World Report rankings, and despite our small size (~6800 undergraduates and ~6000 graduate and professional students) Vanderbilt is ranked in the top 25 in total U.S. federal funding. We are one of only 13 universities that rank in the top 25 in both of these categories, which is quite an achievement. The Vanderbilt campus itself is centrally located in Nashville, being just one mile from downtown, which is one of the most vibrant and cosmopolitan mid-sized cities in the United States. So we think you will really enjoy your time on our campus!

These awards are highly competitive and so you are in a select group chosen to receive this award. There are, however, several qualified alternates and so we would appreciate it if you would notify us of your decision of acceptance as soon as possible and no later than February 25, 2016.

We look forward to your participation in this exciting research program and joining the team of faculty, researchers and graduate students exploring the frontiers of nanoscale science and engineering.

Sincerely,

A handwritten signature in black ink, appearing to read 'Clare McCabe'.

Clare McCabe
Director, Vanderbilt REU Program in Nanosciences,
Professor of Chemical and Biomolecular Engineering,
Professor of Chemistry

Appendix #12: Acceptance into Graduate Programs

Charles Phillips acceptance letter for UMMC Graduate School in Pathology



School of Graduate Studies
in the Health Sciences
2500 North State Street
Jackson, Mississippi 39216-4505
Phone (601) 984-1195
Fax (601) 815-9440

April 25, 2016

Charles Phillips
1212 CR 153
Coila, MS 38923

Dear Charles,

We are pleased to inform you that you have been accepted into the School of Graduate Studies in the Health Sciences (SGSHS) at the University of Mississippi Medical Center for the fall semester beginning August 2016.

You have been awarded a graduate research stipend that provides both individual health insurance and a stipend of approximately \$24,000/year. **Please note: Stipends are not tax exempt.**

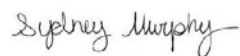
You have also been selected to receive the Dean's Scholarship for the School of Graduate Studies in the Health Sciences. This scholarship pays tuition costs for up to five years of your graduate education. The Office of Student Financial Aid will contact you regarding the next step in the process.

To confirm your acceptance, the attached letter of intent must be returned to the SGSHS office by email to smoulds@umc.edu or fax to 601-815-9440 within two weeks of the date of this letter.

Acceptance to the School of Graduate Studies is conditional; the Admission Committee may rescind an offer of acceptance if an applicant fails to maintain expectations upon which the acceptance was based. Examples include, but are not limited to, failure to complete prerequisites or other course work and degrees in progress, patterns of unprofessional behavior, and incidents discovered in a criminal background check.

We welcome you to the University of Mississippi Medical Center and look forward to meeting you in the near future. **If you have questions prior to your arrival on campus, please contact the director of your graduate program dgrzybicki@umc.edu** or the Office of the Dean of the School of Graduate Studies in the Health Sciences (Email: smoulds@umc.edu or phone: 601-984-1632).

Sincerely,



Sydney Murphy, Ph.D.
Assistant Dean, School of Graduate Studies in the Health Sciences

Cc: Debbie Saxon, Director of Budget and Institutional Resources
Carrie Cooper, Director of Student Financial Aid
Dr. Dana Grzybicki, Program Director, Pathology

Appendix #13: Acceptance into School of Medicine

Ansley Scott acceptance letter for UAMS College of Medicine.

UAMS

COLLEGE OF MEDICINE

UNIVERSITY OF ARIZONA FOR MEDICAL SCIENCES

Richard P. Wheeler, M.D.
Executive Associate Dean
wheeler-richard@uams.edu

James Graham, M.D.
Associate Dean
Undergraduate Medical Education
Graham-james@uams.edu

OFFICE OF ACADEMIC AFFAIRS
4301 W. Markham St., #603
Little Rock, AR 72205-7199
501-686-8499
501-686-8160 (fax)
www.uams.edu/com

February 25, 2016

Ansley Scott
1634 Hawthorne Cove
Byram, MS 39272

Dear Ansley:

I take great pleasure in offering you a position in the 2016-17 entering Freshman medical class.

You are to be commended for superior performance during your premedical years. In fairness to applicants who will not be selected, we reserve the right to review your subsequent academic performance, since a deterioration of work may necessitate reconsideration of your acceptance. In particular, failure to complete your pre-matriculation requirements prior to enrollment in August may cause you to be denied admission. The offer of acceptance is contingent upon the completion of a criminal background check with *acceptable* results. We do not anticipate that reconsideration will be needed and we welcome you to the Class of 2020.

Please complete and return the enclosed "Acceptance Acknowledgement Form" within *two weeks* to accept your position in the next freshman medical class. If you need to discuss pre-matriculation requirements or have other questions, please contact Tom South, Assistant Dean of Admissions, or Jeanne McLachlin, Director of Admissions and Recruitment.

As you may know, there are certain physical and cognitive demands related to medical school. These are described in our "Technical Standards," a copy of which is enclosed. We are committed to reasonably accommodating individuals with disabilities who can, with these accommodations, succeed in completing the medical college curriculum. Our Student Affairs Office is available to discuss any concerns you have about meeting the Technical Standards with or without accommodation. A *Certification of Technical Standards* is enclosed. **Please sign and return it with your response to this offer of acceptance.**

We are proud of our reputation as a college that emphasizes a superb educational experience for medical students. We know that much of our reputation is due to exceptional students like you. Congratulations on this great success! We are pleased to have you as a member of our student body.

Sincerely,



Richard P. Wheeler, M.D.
Professor of Medicine
Executive Associate Dean for Academic Affairs

Appendix #14: Acceptance into Pharmacy Program

Tatyana Givens acceptance letter for Pharmacy Program



COLLEGE OF PHARMACY

Dear Tatyana:

Congratulations on your acceptance into Mercer's Doctor of Pharmacy Class of 2020!

The first items required to secure your position in the Mercer Doctor of Pharmacy Program are responses to the Enrollment Information form (<http://tinyurl.com/MUPharmD2020>) and a non-refundable deposit of \$500.00 to this office by **February 3, 2016**.

A second \$250 deposit will be due on **May 1, 2016**. Seven hundred and twenty-five dollars of the deposit will be credited toward your first semester's tuition while the remaining \$25 will satisfy the University's matriculation fee.

Additional details regarding your acceptance - including any conditions that the Admissions Committee has placed on your acceptance - are included in the hard copy acceptance letter that is being sent to you. A copy of the New Doctor of Pharmacy Student Enrollment Checklist that includes items that you will need to complete between now and when you enroll in August will be included in the letter packet.


Please let us know if we can assist you with any part of the enrollment process. We look forward to your joining the Mercer community next August!

Best Regards,
Jordana

Jordana S. Berry, MBA '04
Director of Admissions and Student Affairs
Mercer University College of Pharmacy
Direct: 678.547.6182
Fax: 678.547.6518
berry_js@mercer.edu

Appendix #15: Scientific meetings attended

ABRCMS 2015 – Adesuwa Ekunwe



ABRCMS
2015th
ANNIVERSARY
seattle
NOVEMBER 11-14

ADVANCED SEARCH

PRESENTER INDEX

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Quick Links 

Presentation Abstract

Session: Poster Session 7 (G), Saturday, November 14, 11:00 am - 12:15 pm
Saturday, Nov 14, 2015, 11:00 AM -12:15 PM

Presentation Title: G060 - Generation of MTA1 Transgenic Mouse Model for Studying Prostate Cancer Progression

Location: Cancer Biology

Scientific Discipline: + 2. Cancer Biology -> a. Cancer Biology

Education Level: Undergraduate Sophomore

Author(s): **Adesuwa O. Ekunwe**; Nasir Butt, M.D.; Swati Dhar, Ph.D.; Avinash Kumar, Ph.D.; and Anait S. Levenson, M.D./Ph.D.
Cancer Institute at the University of Mississippi Medical Center, Jackson, MS

Abstract: In the United States, prostate cancer is a major health problem. It is the second leading cause of cancer death in American men. About 1 in every 7 men will be diagnosed with prostate cancer in their lifetime. Efforts have been

Appendix #16: Prostate Cancer Knowledge Assessment

Prostate Cancer Knowledge Assessment

July 25, 2016

YOUR NAME (Please print legibly): _____

MULTIPLE CHOICE SECTION (Circle the BEST answer).

1) The majority of men in the U.S.A. diagnosed with prostate cancer in the current era have

- A) a small chance of being cured with current therapies.
- B) cancers that are found incidentally on imaging studies done for another reason.
- C) few to no symptoms to suggest the presence of cancer.
- D) severe symptoms that lead to the diagnosis of prostate cancer.
- E) None of the above are correct.

2) Which prostate cell type(s) are most likely to be the cells from which prostate cancers originate?

- A) Basal cells only
- B) Luminal cells only
- C) Neuroendocrine cells
- D) Both basal and luminal cells
- F) Both basal and neuroendocrine cells

3) Which of the following is **NOT** one of the seven standard medical therapies for treating prostate cancer?

- A) Hormone therapy
- B) Magnetic therapy
- C) Radiation therapy
- D) Surgery
- E) Watchful waiting or active surveillance

4) Which of the following drugs used to treat prostate cancer results in a reduced production of testosterone as a consequence of its primary mechanism of action?

- A) Cabazitaxel
- B) Denosumab
- C) Goserelin
- D) Sipuleucel T
- E) Zoledronic acid

TRUE/FALSE SECTION: Circle TRUE or FALSE for each of the following statements.

5) Processed sugar in the American diet is the primary cause of rising prostate cancer rates. (TRUE or FALSE)

6) If he lives long enough, almost every male will develop prostate cancer. (TRUE or FALSE)

7) Human papilloma virus (HPV) causes cervical cancer in females and prostate cancer in males. (TRUE or FALSE)

SHORT ANSWER SECTION: Write the MOST CORRECT short answer in the space provided.

8) Name at least 4 risk factors for prostate cancer:

9) List at least one of the functions of the prostate gland

10) Name a prostate cancer biomarker approved by the U.S. Food and Drug Administration.

Question	Correct Answer	Student 1 6-6-2016	Student 1 7-25-2016	Student 2 6-6-2016	Student 2 7-25-2016	Student 3 6-6-2016	Student 3 7-25-2016	Student 4 6-6-2016	Student 4 7-25-2016	Student 5 6-6-2016	Average pre- course	Average post- course
1		0	1	0	0	0	0	1	1	1		
2	C	0	0	1	0	0	1	0	1	0		
3	D	0	1	0	1	0	1	0	1	1		
4	B	1	1	0	0	0	0	0	0	0		
5	C	1	1	1	1	0	1	1	1	1		
6	FALSE	1	1	0	1	0	1	1	1	0		
7	TRUE	1	1	1	1	0	0	0	0	1		
8	FALSE	1	1	1	1	0	1	0.25	1	0		
9	Age, Family History, Race, Diet (Acceptable answers: to produce seminal fluid; to produce the substances in semen which maintain healthy sperm. Incorrect answer: to produce sperm)	0.5	1	0.5	1	0	1	0	0	0		
10	(Acceptable answers: PSA, Prostate Serum Antigen, Best answer: Prostate Health Index (phi) which combines total PSA, free PSA and [- 2]proPSA into a single score.)	0	1	0	1	0	0	0	0	0		
Final Score		45.00%	90.00%	35.00%	70.00%	0.00%	50.00%	32.50%	60.00%	40.00%	30.50%	67.50%
Improvement		200%		200%		#DIV/0!		185%				221%

Appendix #17: Testimonials students Class of 2016

Courtney Mangum

courtmandum@gmail.com



Current status: Courtney Mangum, from Jackson, Mississippi, is a senior biology major at Tougaloo College. She is currently working on going to medical school upon graduation in 2017. She is proud to be the Vice-President of the National Pre-Alumni Council of the United Negro Fund.

Mentor: Dr. Keli Xu

Project title: Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models

Recent accomplishment: She is a recipient of University at Buffalo School of Medicine and Biomedical Sciences Early Opportunity Program in Medicine, where she will be attending fall 2017. She was

just recently inducted as an Associate Member of the Brown Chapter of Sigma Xi: The Scientific Research Society. She has presented at many research conferences including the Annual Biomedical Research Conference for Minority Students, Emerging Researchers National Conference in STEM, and the 13th Tougaloo College Millsaps College Undergraduate Research Symposium.

Personal statement: My recent studies have been some of the most valued experiences of my life. The pure essence and quality of the HBCU-UMMC internship is what was valued. Researchers play key role in medicine. Research engages intellectual curiosity and allows for creativity. Working in the field of prostate cancer has opened my mind to different risk factors of this disease, specifically old age and being of African American descent. The lack of preventative treatments baffles me and drove my interest even more. I refuse to be stagnant in my career; researching and becoming a part of the Mississippi Prostate Cancer HBCU Undergraduate Research Training Program equipped me with a broader knowledge of cancer and biology on a molecular level. I am currently seeking a higher education so that I may make the lives of others better.

Ornella Amoah

ornellaamaoh@gmail.com



Current status: Ornella Amoah is a junior Chemistry major at The Jackson State University. This summer she was able to study hypoxia in relation to prostate cancer with proteins HURP and HIF-1alpha. Ornella is currently the NOBCCChE JSU student chapter secretary and the ACS JSU chapter vice president.

Mentor: Dr. Christian R. Gomez

Recent Accomplishments: Awarded Dean's and President's List for the 2014-2016 school years. Nominated to the Alpha Lambda Delta and National Society of Collegiate Scholars 2015- present.

Personal statement: This summer I was able to experience a great deal of laboratory techniques and protocol. I am grateful for being able to participate in the HBCU Prostate Research Training Program because my time in lab and at the lectures educated me to the significance of cancer research. I learned of the disparities between African American men and other races in the US in the rates of new cases and deaths from prostate cancer. African men in the US are not only prone to aggressive forms of the cancer, but because of the lack of medical support in most of their communities, they are diagnosed late or are unable to access medical help. My experience this summer has reignited my love for medicine and science and assured me educational path.

Appendix #18: Social media resources

Facebook group screenshot

The screenshot displays the Facebook interface for a group titled "UMMC – HBCU: Prostate Cancer...". The group is marked as a "Secret Group" and has a banner image featuring the "CDMRP Department of Defense" logo. Navigation tabs at the top include "Discussion", "Members", "Events", "Photos", and "Files". A search bar is located on the right side of the top navigation bar.


On the left side, there are options to "Escrever publicação" (Write post), "Adicionar foto/video" (Add photo/video), and "Criar enquete" (Create poll). Below these is a text input field with the placeholder "Escreva algo...".

The main content area features a "PINNED POST" by Christian Gomez, dated March 27, 2014. The post text reads: "The Mississippi Prostate Cancer HBCU Undergraduate Research Training Program is supported by the U.S. Department of Defense Prostate Cancer Research Program. Our goal is to train undergraduate students from two Historically Black Colleges and Universities, Tougaloo College and Jackson State University so they can gain experience in performing prostate cancer research at the University of Mississippi Medical Center Cancer Institute." The post has 1 like and is marked as "Visualizado por todos" (Viewed by all).

Below the pinned post is the "RECENT ACTIVITY" section, showing a post by Christian Gomez from July 29. The post text reads: "Dear friends, we are very excited about the upcoming: 2016 Prostate Cancer Research Mini Symposium Wednesday, August 3, 2016 8:30 am - 1:00 pm University of Mississippi Medical Center... See More". Below this post is a file upload titled "UMMC-HBCU 2016 Symposium Program 072916.pdf".


On the right side, there are several sections: "ADD MEMBERS" with a search bar, "MEMBERS" showing 14 members with profile pictures, "DESCRIPTION" stating "The Mississippi Prostate Cancer HBCU Undergraduate Research Trai... See More", "GROUP CHATS" with a "Start New Chat" button, "CREATE NEW GROUPS" with a "Create Group" button, "RECENT GROUP PHOTOS" showing three photos, and another "CREATE NEW GROUPS" section at the bottom.

LinkedIn group screenshot



UMMC – HBCU: Prostate Cancer Research Training
16 members

✓ Member




Start a conversation with your group

Enter a conversation title...

Conversations

Jobs



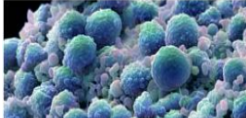
Christian Gomez
Associate Professor in Pathology and Radiation Full member, Cancer In...
OWNER

*** 1mo

Upcoming Prostate Cancer Rseach Mini-Symposium!!! August 3 - 2016

Dear friends, we are very excited about the upcoming:
2015 Prostate Cancer Research Mini Symposium
Wednesday, July 29, 2015
8:30 am - 12:30 pm
University of Mississippi Medical Center
Norman C. Nelson Student Union
Rooms A & B

Please consider attending our ... [Show more](#)











ABOUT THIS GROUP

The Mississippi Prostate Cancer HBCU Undergraduate Research Training Program is supported by the U.S. Department of Defense Prostate Cancer Research Program.

Our goal is to train undergraduate students from two Historically Black Colleges and Universi... [Show more](#)

MEMBERS

16 members



Invite others

